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St. Bartholomew's Hospital Journal,

DECEMBER 14th, 1895.

"Æquam memento rebus in arduis
Servare mentem."—Horace, Book ii, Ode iii.

A Teaching University for London.

IV. Events which have occurred since the Issue of the Report of Lord Cowper's Commission.

In the ST. BARTHOLOMEW'S HOSPITAL JOURNAL of March, April, and May, 1894, we published a series of three articles upon the above subject, dealing with (1) *From the Commencement of the Movement to the Report of the First Royal Commission*; (2) *The Events which followed the Report of the First Royal Commission*; (3) *The Report of the Gresham University Commission*.

Since the date of the last of these articles in May, 1894, many events have happened, and though as yet no practical outcome has resulted, we cannot help thinking that we

must be nearer to a solution of this great problem than we were eighteen months ago. At any rate it seems to us desirable to chronicle what has happened since then, so that our readers may be fully informed of the most recent doings of those interested in this question, and at the same time, to take a general review of the present position of affairs.

The interval between March, 1894, when the report of Lord Cowper's Commission was published, and June, 1894, when a General Meeting of Delegates from Institutions mentioned in the Report of the Royal Commission was held at the Royal College of Physicians, was occupied by the consideration of the proposals of the scheme by the various institutions and bodies affected. In brief, it may be stated that, with the exception of King's College, all the Institutions outside the University had by June, 1894, expressed their general agreement with the scheme proposed in the Report of the Commission. The greatest interest during that period was centred upon the University of London itself, and it will be necessary now to describe somewhat fully the events within the University up to that time. The Annual Committee of Convocation which was in office in March, 1894, was hostile to the scheme of reconstruction which we are now dealing with, and this Committee presented a special report upon it at an Extraordinary Meeting of Convocation held on April 10th. In this report the (then) Annual Committee recommended the adoption by Convocation of a series of five resolutions declining to accept the scheme of Lord Cowper's Commission. After the first of these proposed resolutions had been discussed at some length, it became clear that the results of a vote would be very doubtful, and the supporters of the Annual Committee very cleverly managed to shelve the whole question and to prevent Convocation expressing an opinion on the direct issue. The result of their manœuvre was that the scheme was referred back to the Annual Committee with power to appoint members of a Joint Consultative Committee of the Senate and Convocation. The Senate having agreed to the proposed Joint Consultative Committee, the Annual Committee proceeded to appoint its half of the Consultative

Committee, the majority of whom were known to be hostile to reconstruction.

Meanwhile a very large and influential body of graduates who are in favour of reform on the lines of the Report of Lord Cowper's Commission formed a Committee with Mr. Cozens Hardy as Chairman, Mr. Thistleton Dyer and Dr. Allchin as Vice-Chairmen, and Mr. H. J. Waring, Dr. Wynne, and Mr. Gregory Foster as Secretaries. This Committee at once took two important steps—(1) A circular was sent to all members of Convocation asking for an expression of opinion on the scheme, and within a week or so, 750 favorable replies were received; (2) They nominated a number of graduates known to be favorable to the scheme, for the Annual Committee, the election to which was fixed for May 8th, 1894. When the Annual Meeting was held on May 8th, 1894, Mr. Thistleton Dyer rose to propose the motion: "That Convocation, whilst reserving its right to represent its views before the proposed Statutory Commission, hereby expresses its general approval of the Report of the Royal Commission," but was at once ruled out of order. Thus, Convocation was again prevented from expressing its opinion on the main issue. When, however, the result of the election of the Annual Committee became known it was found that the whole of the nominees favorable to the scheme had been elected by large majorities. Thus, indirectly, the view of Convocation became known. Meanwhile, an indignation meeting of the graduates favorable to the scheme, numbering 230, was held, and resolutions passed and forwarded to the Senate. The members of the Consultative Committee appointed by the old (and disgraced) Annual Committee thereupon resigned, and the new Annual Committee appointed new members to the Joint Consultative Committee. The legality of this election was called in question, and the Senate thereupon decided not to proceed further with the Joint Consultative Committee, but appointed a day to hear the views of both sides. On June 28th the new Annual Committee resolved:

"That it is desirable to memorialise Government to take immediate steps for the appointment of a Statutory Commission to frame Statutes in general accordance with the Report of the Gresham Commission, with full power to make such modifications as they may see fit, after conference with Convocation and other bodies affected."

By this time, all the Institutions outside the University mentioned in the Report had agreed to the scheme, except King's College, and the meeting at the College of Physicians had been arranged. At the date, then, of this meeting on June 30th, 1894, neither the Senate nor Convocation had *formally* agreed to the scheme of the Royal Commission, but on the previous day a Committee of the Senate had consulted with the members of Convocation opposed to, and with the Annual Committee of Convocation in favour of the scheme.

The meeting at the College of Physicians was not quite unanimous, King's College dissenting. But the following resolution was passed:

"That this meeting of Delegates from Institutions mentioned in the Report of the Royal Commission on the Gresham University desires to express, generally, its approval of the proposals contained in the Report of the Royal Commission, and would urge on the Government that a Statutory Commission be appointed at an early date, with power to frame statutes and ordinances in general conformity with the Report of the Royal Commission."

This resolution was forwarded to the Government, but the Session was too far advanced for any action to be taken upon it.

Immediately afterwards, the Senate, with only two dissentients, resolved:

"That it is desirable to memorialise Government to take immediate steps for the appointment of a Statutory Commission to frame statutes and ordinances in general accordance with the Report of the Gresham Commission, but with power to make such modifications as may seem to them expedient after considering any representations made to them by the Senate, Convocation, or any other bodies affected."

To sum up—the position in July, 1894, was that all bodies were agreed, except King's College and (by formal vote) Convocation of the University.

Affairs after this remained in a more or less inactive state until the beginning of 1895, when it was intimated that Lord Rosebery was willing to receive a deputation of delegates from Institutions mentioned in Lord Cowper's Report in support of the resolution passed at the College of Physicians in the preceding July. A preliminary meeting of these delegates was held at the University of London on January 21st, when speakers were chosen. It was then learnt for the first time, that though the Council of King's College did not consider the scheme the best possible solution, they were willing to concur with other institutions in supporting the appointment of a Statutory Commission, reserving their right to urge their objections before that Commission. The deputation waited upon Lord Rosebery on January 22nd, and was introduced by the late Professor Huxley, who asked Lord Rosebery to listen to an exposition of their views as to the best means of organizing into a university the institutions for teaching and learning which at present exist in London, and with a view of inducing the Government to take steps which they believe are necessary to bring about such a result. The deputation included representatives of the Senate, the Annual Committee of Convocation, the Committee of the Graduates of the University, the principal London colleges, the great medical colleges and schools, and other educational institutions, as well as those engaged in teaching and investigation of science.

After reviewing the general history of the movement to found in London an university worthy of the name,—not a purely examining body,—Professor Huxley stated that all were agreed in desiring, first, the formation of one gigantic University in London by the voluntary co-operation of the various institutions for learning, teaching, and examining, which separately co-existed in London; and, secondly, the appointment of a Statutory Commission as an instrument for affecting such an organization.

Lord Rosebery's reply was, on the whole, favorable, for he said that he thought the desire of the deputation a reasonable one, and that the time seemed a good one for the appointment of a Statutory Commission.

A second deputation from two opposing factions in the minority of Convocation attended subsequently on the same day, and Lord Rosebery's reply to them was even more favorable to the proposals of reconstruction than his reply to the first deputation.

On the same day, January 22nd, 1895, a meeting of Convocation *ad hoc* was held, and, after a long debate, passed the following resolution by 206 to 175 :

"That Convocation is of opinion that there should be one University in London and not two; and that the interests of higher education will be best served by such an enlargement and reconstruction of the existing University as will (while retaining its existing powers and privileges, and without interfering with the efficient discharge of its present duties as an examining body for students from all parts of the British Empire) enable it to promote learning, scholarship, and research as a teaching University for London."

At the same meeting, the further resolution was passed by 157 to 133, viz. :

"That Convocation, while desiring to express generally its approval of the proposals contained in the Report of the Royal Commission, is of opinion that power ought to be given to the Statutory Commission to vary the details of the scheme, and that it ought to be made an instruction to the Commissioners before framing statutes and regulations to confer with duly accredited representatives of the Senate and Convocation as to the modifications which may be desirable."

Thus, on January 22nd of this year, *all the institutions or bodies affected had by direct formal vote accepted the main principles of the scheme.*

After this, no important step was taken until on May 9th, when Lord Playfair, on behalf of the Government, introduced a Bill into the House of Lords to appoint a Statutory Commission. The most important clauses in this Bill were :

3. "(1) The Commissioners shall frame statutes and ordinances for the University of London in general accordance with the scheme of the report hereinbefore referred to, but subject to any modifications which may appear to them expedient after considering any representations made to them by the Senate or Convocation of the University of London, or by any other body or persons affected.

"(2) In framing such statutes or ordinances the Commissioners shall see that provision is made for securing adequately the interests of non-collegiate students.

"(3) All such statutes and ordinances shall be laid forthwith before both Houses of Parliament, and shall come into operation on the expiration of forty days after they have been so laid, and shall have effect as if enacted by this Act, but shall be subject to alteration in manner provided by such statutes and ordinances—"

A few days later, on May 14th, 1895, Convocation of the University again met, and Mr. Bompas, Q.C., invited the members present to rescind the resolutions passed on January 22nd; but his motion to rescind was lost by 238 to 117, or by two to one. Thus Convocation again affirmed its approval of the scheme. At the same meeting the whole of the nominees of the graduates favorable to reform were re-elected to the Annual Committee.

Lord Playfair's Bill never came to a Second Reading, for as everyone knows, a political crisis occurred shortly after

the events just narrated, which resulted in the defeat of the Government of Lord Rosebery. Then followed the General Election of July, 1895. It is necessary to refer to this, for it formed the starting-point of the next phase in the history of this question. It is now, perhaps, desirable to point out that, though *officially* agreed to, there is a large minority opposed to the scheme of reconstruction. This minority consists of two factions opposed to each other, but united on the one point of opposition to the scheme. They are : (1) Those graduates who are opposed to *any change whatever* in the existing arrangements of the University ; (2) Those who, while in favour of developing the University into a real Teaching University, are not in favour of the *particular* scheme embodied in Lord Cowper's report.

One or both of these sections of the minority appear to have been actively at work, and to have influenced Sir John Lubbock, the member for the University, for when his electoral address was issued, it contained the remarkable paragraph :

"Feeling that Convocation ought to be consulted on a matter so vitally affecting the University, I should strongly urge, and would do my best to secure, that the scheme, when arranged, should be submitted to Convocation for their approval, to be signified as at a Senatorial election, and would oppose the Bill unless this were conceded."

This must have been written without a full knowledge of the facts. The first clause seems to imply that it was desired to force on the University something which Convocation does not want. This is not so; Convocation *has been consulted*, and has decided by clear and distinct majorities on *two* occasions in favour of appointing a Statutory Commission reserving the right to be heard before that Commission, and the Bill of Lord Playfair, as quoted above, expressly provides that modifications may be made after considering *any representations from the Senate or Convocation.*

The ground, then, on which Sir John Lubbock would urge that the scheme, when finally arranged, should be submitted to the veto of Convocation, *does not exist.*

In the extract from Sir John Lubbock's address, above quoted, occur the words : "to be signified as at a Senatorial election." On these words hang the whole of the present difficulties. In May last, a vacancy in the Senate was filled up by the election of Dr. Napier, one of the main opponents in Convocation of the scheme of reconstruction, by 1231 votes to 733 given to Mr. Cozens Hardy. In an election to the Senate, members of Convocation can vote *whether present, at the meeting or not*, and it is asserted that Dr. Napier's election indicates that the majority of members of Convocation are opposed to the scheme. To say the least, it is extremely doubtful whether this conclusion can be drawn from this particular vote, for the election referred to *was not fought on the question of reconstruction at all.* Whether this be so or not, the opponents of reconstruction have made the most of the result of this Senatorial election, and it has undoubtedly weighed very greatly with the Duke of Devon-

shire, as is clear in his reply to a deputation to him on November 28th last.

Sir John Lubbock and those who oppose reconstruction now demand that a clause should be inserted in the Bill giving to members of Convocation a right to approve or condemn the results arrived at by the Statutory Commission, *to be signified as at a Senatorial election by voting papers.*

To take events chronologically, the next step was taken by the teachers in the medical schools of London, who held a general meeting at the Examination Hall on November 20th last, when the following resolution was *unanimously* passed:

"That the Government be requested to introduce, at an early date, a Bill, similar to Lord Playfair's London University Commission Bill, 1895, appointing a Statutory Commission to carry out the recommendations of Lord Cowper's Commission; but with an added clause giving (in accordance with precedent Acts of similar tenor) to all Institutions or persons directly affected by any Statute or Ordinance proposed by the Statutory Commission a right of appeal to the Privy Council for the disallowance or alteration thereof, previous to such Ordinance being laid before Parliament for confirmation."

A resolution in exactly the same terms was passed on the next day at a meeting of delegates from all Institutions and Bodies concerned, held at the University of London, with Sir James Paget in the chair, and a deputation of these waited upon the Duke of Devonshire on November 28th last. The influential character of this deputation cannot be denied, for it included representatives of all Bodies concerned, including the Annual Committee of Convocation. The speeches made were of the greatest ability, and put the case in a most forcible and definite manner. The Duke's reply was hardly encouraging, for he laid great stress on the views of the opposing factions in Convocation, and seemed to indicate that he regarded the introduction of the clause demanded by Sir John Lubbock as conceding only the rights which Convocation now possesses. In this we maintain, with all due respect, that the Duke of Devonshire is mistaken. *Convocation has no such right of veto on the decisions of a Statutory Commission.* Under the existing charter of the University, *Convocation, i. e. the graduates in meeting assembled*, has the right to consent to the surrender or modification of the existing charter, but no such right is given to the *members of Convocation* as individuals—in other words, Convocation has no right to agree (or disagree) to such surrender or modification, *except in meeting assembled*, and therefore no right to the veto demanded. By the votes on January 22nd, 1895, and on May 14th, 1895, Convocation has, in effect, surrendered its rights under the charter, by consenting to the formation of a Statutory Commission, subject only to the condition that it may represent its views before the Statutory Commission.

Why, it may be urged, will external bodies not consent to members of Convocation having the right of veto demanded? The reasons must be obvious:

1. They have no such existing right.
2. To make such a concession to one of the bodies con-

cerned would not be right to institutions external to the University, for very large and important interests other than those of the existing graduates are to be dealt with.

3. It is doubtful whether men of such eminence as would be required to form an efficient Statutory Commission could be found to serve, if all their labour is liable to be overthrown by a chance vote of irresponsible graduates.

4. Granting that it is desirable that an appeal from the decisions of the Statutory Commission should exist, would it not be the height of absurdity that such appeal should be from a judicial and responsible Statutory Commission which has heard the evidence, to an irresponsible and non-judicial body such as the members of Convocation, who have not heard the evidence?

5. The supporters of the scheme, recognising the desirability of some appeal, are willing that the body to which such appeal can be made should be the Privy Council, as expressed in their last resolution.

6. The reason for wishing for a clause giving a right of veto to members of Convocation is that they fear that the interests of private students may be interfered with. This is founded on an entire misapprehension of the facts. In the scheme of the Gresham Commissioners the interests of external students are fully safeguarded, and a reference to the text of Lord Playfair's Bill, above quoted, will show that the proposed Statutory Commissioners are instructed to see that the interests of these students are adequately secured. What more security than this, coupled with an appeal to the Privy Council, can anyone reasonably desire?

7. There is no reason for granting to the graduates of the University of London more than was given to those of Oxford and Cambridge when these Universities were reformed by Statutory Commission.

In the foregoing description and criticism we have, we believe, put the facts fairly before our readers, and shown them exactly the present situation. What will be the outcome time only can show, but that the present is a crisis of the most vital importance to all medical students in London we are fully convinced.

Notes from Out-patient Practice among Epileptics.

By J. A. ORMEROD, M.D.

EPILEPSY is in theory a most interesting disease, but as seen in out-patient practice it sometimes proves a little dull, for the fits themselves are rarely witnessed by the physician, there is little to be made out by physical examination, and the progress of the case is apt to resolve itself into a mere record of fits on the one hand and administration of bromide on the other. Nevertheless I venture here a few remarks on chronic epileptics,

derived from some years' out-patient work among patients of this class. They may not be novel, but will serve to illustrate facts oftener read about than seen by students.

Granting that in most cases the essential cause of the disease is constitutional,—some deeply ingrained fault of the nervous system,—yet it is important to observe the exciting causes of the fits themselves. For, firstly, the frequency of fits may be the only means for measuring the progress of the disease; secondly, the mere occurrence of a fit increases (it is thought) the predisposition to further attacks, so that it must be our object to keep the fits in abeyance as much as possible.

Among such exciting causes the commonest are—excitement of all kinds, school treats, Christmas festivities, &c., for children; salvation army meetings and other religious dissipation for young adults; scenes of violence, fires, sudden deaths, injuries to the head, &c. Drunkenness may not only prepare the ground for epilepsy, but the fits may follow each bout of drinking. Thus James F—, æt. 28, a man accustomed to heavy drinking, had his first fit after drinking, and the third also (he had the first three in six weeks); then under bromide he had none for some months; a fourth bout of fits followed indulgence in "two or three half-pints;" the fifth attack came without alcohol, the sixth after he had begun to drink again. The following case in which the fits were determined by mental application is not at all common. A young man, Richard F—, determining to become a schoolmaster, had a fit while puzzling over arithmetic. He had had one before under similar circumstances, and had had fits as a schoolboy while trying to learn Latin and French. Some months later he had another fit while doing algebra, and another while at arithmetic, and so on several times. Much more commonly the reverse condition, namely sleep, favours the outbreak of fits. It is well known, of course, that epilepsy, like other neuroses, such as asthma, tetany, and the newly-named "acro-paræsthesia," may manifest itself solely or chiefly in the night-time; it is also frequent for patients to have their attacks soon after waking in the morning. That this is not mere periodicity but is in some way dependent on the sleep itself is shown by the case of a boy, Alfred W—, who used to have a fit regularly every morning after waking; if he got up the moment he woke, the fit would come after he was up. When the fits were checked by bromide, he would still have an headache for an hour or two after getting up. But this was not all, for if he went to sleep in the daytime he would have a fit on waking. Some patients are said to have fits mainly at certain times of year, viz. the "spring and the fall," but I have not been able to verify this, any more than the similar statements sometimes made that patients are worse at "the changes of the moon." There exists, however, in female patients a really potent periodical influence, viz. the menstrual nîsus. Almost all epileptic women are worse about their catamenial times, and many

have their fits only then. The converse happens when they marry and conceive, for during pregnancy and suckling the fits may lessen or disappear. Of this I have seen several instances, as against some three or four only who said that they were worse during pregnancy. An epileptic, Marian Amelia L—, who had passed her menopause, continued for a year afterwards to have attacks of *petit mal* at the times when the menses would have been due.

Whether ear disease can set up epilepsy in a person not predisposed to it, is doubtful. It seems reasonable, however, to think that irritation from a diseased ear would make an epileptic worse. I have seen a few instances in which the fits improved after treatment of a chronic otorrhœa, or after the pent-up middle ear secretion began to discharge. Again, we may call to mind that vertigo is a symptom both of ear-disease and of epilepsy, and that it is by no means easy to draw the line between aural and epileptic vertigo. Some epileptics, suffering from ear-disease, and subject to attacks of vertigo, have the same vertigo as an aura of their epileptic fits. An elderly woman, Elizabeth L—, attended under me for aural vertigo. At any rate she had chronic middle ear catarrh, deafness, tinnitus, and paroxysms of severe vertigo, in which she would sometimes fall. These paroxysms were much benefited by Charcot's treatment with quinine. Later on she had attacks characterised by sudden loss of consciousness and falling. Such facts at least suggest that aural vertigo and epileptic vertigo may stand in some relation to each other.

Certain ophthalmologists, both in America and in England, have proposed to cure epilepsy by the correction of errors of refraction. I take it that here, as in the case of ear disease, relief is obtained by the removal of a source of peripheral irritation, but that the deeper-seated causes of the disease will remain.

Nevertheless, seeing that we have so little control over the central nervous system, the detection and removal of all sources of peripheral irritation, whether in the patient's organism or in his surroundings, is an extremely important task.

The mental condition of epileptics is not easily studied in the out-patient room; still, when many patients are watched for a long time, some information may be obtained on this head. The commonest and earliest mental defect is failure of memory, and in old-standing cases such failure is the rule. It may be accompanied by general dulness and hebétude of thought, which is often written plainly in the patient's face and manner. This is sometimes put down to the continuous administration of bromides, but more often, I believe, the disease is to blame. The epileptic maniac as described in books of forensic medicine, who, without warning, breaks out into attacks of homicidal violence, is happily not often seen in the out-patient room. Not long ago, however, a patient at Queen Square suddenly seized the poker, and was about to demolish his physician.

Once a big powerful man, who was sitting waiting his turn among my out-patients, rushed suddenly into the street, brandishing a heavy stick which he habitually carried, and had to be pursued and overpowered by the porters. And occasionally, after fits, there are scenes of extreme and unreasonable violence. More commonly one hears of a gradual mental degeneration—patients become irritable, spiteful, suspicious, and if not insane, yet very undesirable associates. A young man (George H—), whose aspect is that of a very low type, has been attending under me since 1883. He often comes into the room with an embarrassed suspicious look, and when asked what is the matter, will first say that he “sees these colours—red, green, blue, &c.,”—then that he “feels queer,” as if he had no business here, as if he had done something for which he should be blamed, &c. Lately, his friends say, he has become crazy on religion. There are out-patients who have had attacks of temporary insanity or dementia, yet who seem now to be mentally sound. A man, æt. forty-five (W—) epileptic for twenty-two years, was recently brought to me by his wife in the following condition:—He sat in the chair, leaning back and occasionally laughing idiotically, barely replying when spoken to. When asked if he felt anything wrong, he rolled his head back, smiled, shut his eyes, and pointed to his epigastrium. Two days previously he had had a batch of fits; the next day he was apparently, well but very obstinate and tiresome, and the next morning woke in the condition described and was brought to the Hospital. The morning after his attendance there he woke quite well, and apparently remembered most of what had passed. But abnormal mental conditions may last much longer than this, and clear up.

Of permanent insanity necessitating confinement, one hears remarkably little, considering the large number of epileptics who attend at Queen Square, and the large contingent of epileptics in the various asylums. Either the out-patient drops into the asylum without the physician hearing of it from his friends, or the out-patient epileptic and the asylum epileptic belong to different types, as appears to be the case with the general paralytics.

Neither is it common to hear of death resulting directly from the disease, though in this matter too the friends may neglect to give information. The following are instances of death from epilepsy. Percy P—, æt. 7, had had fits for two years. Formerly a bright child, he had become (like other children under like circumstances) unintelligent, troublesome, and cunning. Bromides diminished the fits, but made him heavy and more stupid. Tincture of belladonna for over a year did good; then the bromide was recommenced with better results. After four and a half years' attendance, resulting in a certain degree of improvement, he had several prolonged bouts of fits, and died *in statu epileptico*.

Charles F—, æt. 20, when first seen, had been epileptic for six years. He attended for four and a half years, having

at one time seven months' freedom from fits and *petit mal*. Finally he died at Guy's Hospital *in statu epileptico*.

Caroline B—, æt. 13, had been epileptic for six years. After three years' attendance she went to bed one evening apparently well, next morning was found insensible, and on the doctor's arrival was dead.

Alfred C—, æt. 12, came for epilepsy of three months' standing, and attended for nine years. Bromide did not suit him, but he did rather better on borax. One morning he was found dead in his bed, lying on his face. A relative who slept with him, and who was usually roused by his fits, had heard nothing.

Curious conditions often follow the epileptic fit, and such post-epileptic states are always worthy of observation. Some years ago I interviewed an epileptic sent up from the country, and admitted him. The next day our then resident officer, Dr. James Oliver, who subsequently published the case, came to ask me why I had sent in a lunatic, for the man neither knew where he was nor how he came there. It turned out that he had had a fit in the night, as the result of which all memory of recent events was blotted out, though he could remember the scenes and events of his youth. There was no other mental defect, and his memory gradually returned. This happened repeatedly while he was under observation.

Mary B—, æt. 20, had her first fit a fortnight after (and she thought in consequence of) a fright. After her fits she always assumed the attitudes and expression of fright. She had put her shoulder out in one fit, which seemed to indicate that they were not simply hysterical fits followed by *attitudes passionelles*.

Hannah B—, a single woman of 33, who, besides her regular fits, used to have so-called “stupors” and to act unconsciously, was accustomed at one time to wake from her post-epileptic sleep violent and frightened, and she would then accuse the first man she saw, even her own father, of having violated her. Obviously she might have proved more dangerous than any maniac.

Henry T—, æt. 20, a mason by trade, had been epileptic from his youth. Recently, after a severe fit, he was for two or three days in a “kind of trance.” He imagined he was in the shop of a hairdresser, who told him to find a cure for fits. This passed off, he said, when he actually went into a shop of the kind. He has had similar feelings after subsequent fits. What startled the imaginary hairdresser, or whether he merely antedated the real one in trying to recall his mental state, I could not find out.

The remarkable condition known as epileptic automatism generally occurs after a fit; indeed, some say always either after a fit or after an attack (perhaps unnoticed) of *petit mal*. The majority of patients do not exhibit this phenomenon; those that do are mostly epileptics of some standing, and it may recur often in the same patient. The epileptic performs some act, more or less complex, apparently without

knowing what he does, and without remembering it afterwards. Usually it is some trivial action of his daily life.

Thus Emily C—, whose fits, according to her account, were sometimes heralded by "a ding in her ears, and a peculiar feeling in her mind," used to rake out the fire, put things away in wrong places, and so on, unconsciously. These actions of course may be quite incongruous with the time or the circumstances; thus patients often begin to undress in public. Eliza H—, æt. 20, emptied a slop-pail into a bed. William S— mixed the tea with the sugar, made water into the children's shoes, and so forth. Much more elaborate actions than these may be performed unconsciously. Henry S—, a clerk, walked from his home in Mayfair to his work at the Army and Navy Stores without knowing it. On subsequent inquiry he was told that he started punctually, but arrived a quarter-hour late.

This same man sometimes ate his meals, or undressed and went to bed unconsciously,—always either after a fit or an attack of *petit mal*. This *petit mal* he described as "strange thoughts or remembrances;" he said a thought would suddenly come into his head, and he felt warm in the head and drowsy. At such times his wife noticed that he turned pale, looked "misty" about the eyes, and held up his hand as if to stop her speaking. He was sane, but irritable, and would threaten to "smash" his fellow clerks when they annoyed him.

Harriet Louisa S— used constantly to act automatically, generally in connection with her household work. On one occasion she did as follows. She started to go to the butcher's, but, losing consciousness on the way, went to the baker's instead; then she took from the hand of a girl who was scrubbing the counter some soap, with which she proceeded to wash her hands. The girl knew her peculiarities, and said nothing till afterwards. She also went to the grocer's and bought things she did not want—the shop-people not recognising her condition. Finally she went to the greengrocer's, where she came to, and was surprised to find herself with groceries and change which she could not account for. Another time she had an attack in her house, and on coming to found some linen from the mangling which had not been there before. It appeared that she had answered the door, taken in the mangling, and paid for it. She had also for no particular reason turned the clothes down off a bed. It might be supposed that she acted consciously and simply forgot what she had done afterwards, but in each case there was something wrong with her actions—the soap, the wrong shop, the bed-clothes. She is an unimaginative-looking person, past middle age, and I do not think she romances.

Abernethian Society.

The Mid-Sessional address will be given by Mr. Henry Power (in place of Mr. Vernon) on January 16th. Mr. Power's subject will be "Music and Medicine."

The Mechanism of Phagocytosis.

A Paper read before the Abernethian Society on
November 14th, 1895.

BY W. LANGDON BROWN, B.A.,
Assistant Demonstrator of Biology.



EW facts have had such a wide application as that following the discovery of phagocytosis. The process is so closely connected with the study of many diseases, and with the whole question of the repair of injured tissues, that scant apology is needed for bringing some of the aspects of the subject before the Society, even though the treatment of those aspects be not clinical.

It is the special merit of Metschnikoff's work that he has recognised the important part played by the white blood-corpuscle in physiological and pathological processes. So far from its being simply an immature red blood-corpuscle as was taught not so many years ago, we now know it to possess a genealogical tree of the highest respectability, while the red corpuscle is the merest parvenu. Mere oxygen-carriers have arisen repeatedly in the evolution of species; we meet with isolated examples in the razor-fish, in *Capitella* among the worms, and in that anomalous creature *Phoronis*. Nature has performed the comparatively easy task of manufacturing an oxidisable pigment like hæmoglobin or hæmocyannin wherever the necessity has arisen; while the white blood-corpuscle traces its pedigree directly back to the primitive amœba.

I. The Genealogy of the Sporadic Mesoblast.

I may perhaps be pardoned for recalling the genealogy of the phagocyte. The primitive Protozoan is typically amœboid, *i.e.* it effects both locomotion and capture of its prey by throwing out those protoplasmic processes known as pseudopodia. In a Metazoon like *Hydra*, however, such properties are confined to the inner layer of the body, the cells of the endoderm being capable of throwing out processes to enclose the solid particles found in its internal cavity (coelenteron); digestion being in the Protozoa entirely, and in the Coelenterata for the most part, *intracellular*. With the appearance of a third body-layer—the mesoderm—a further differentiation is seen; to this new layer the amœboid property is relegated. This is shown very concisely in the case of a star-fish larva (*Astropecten*). The segmented ovum forms the hypoblast by invagination of some of its cells, and from this invaginated layer (which will form the endoderm) the mesoblast is budded off in the form of amœboid cells. The property of intra-cellular digestion is now practically confined to cells of mesoblastic origin—the endoderm, the general digestive layer of the body, performing its task by the more potent method of elaborating secretions which it pours into the alimentary canal—*extra-cellular* digestion. Among the higher forms of life the last representatives of endodermal pseudopodia are to be found in the retractile cilia of the earthworm's intestine described by Miss Greenwood, and in the striated border of the cells of the intestinal villi in mammals.

So that it is to the mesoderm we must turn our attention if we desire to follow the history of the amœboid cell. In animals which possess no vascular system these cells can wander about in the body-cavity freely, ingesting foreign particles which may have been introduced or surrounding those too large to be ingested. They still retain all the primitive amœboid characters. When the vascular system first appears it is not a completely closed system of tubes, a large part of the circulation being carried on in lacunar spaces. Hence the wandering cell can be readily transported to any part of the body in which its presence is needed. But when these lacunæ are replaced by a closed system of capillaries, those wandering cells which are normally within the vessels have to escape from them before they can get to the required place; hence, we find the process of diapedesis, or the emigration of the white corpuscle through the capillary wall, is one of the first signs of the reaction of such an organism against foreign invasion.

To the whole class of intra-vascular and extra-vascular wandering cells the term sporadic mesoblast may conveniently be applied.

Thus in tracing the genealogy of phagocytosis we find that in every animal some cells retain the primitive power of locomotion and ingestion possessed by the amœba; that whereas in the lower forms this ingestion is the normal method of nutrition, in the higher forms only the nutrition of the sporadic mesoblast is thus carried out, and the process is maintained for protective reasons.

Wandering cells, then, are the survival of generalised movement which has been so largely replaced by specialised contractility; and

amœba or a leucocyte can move in any direction, while a muscle-fibre can only contract in the direction of its axis. Corresponding to this their optical properties differ,—for the former is singly-refracting while the latter contains doubly-refracting material.

It becomes of interest then to inquire into what we know of the machinery of this most primitive form of movement. Though so primitive among biological processes its complexity is very great compared with the most complex of inorganic machines, as is shown by the way in which an amœba can steer itself round an obstacle, while a steam-engine for instance is totally incapable of avoiding the simplest obstruction.

At a time when we are beginning to discuss the doctrine of variation in terms of the binomial theorem, and to state a man's constitution in terms of his maternal uncle, my title may have led some to expect that I am about to explain the mechanics of a phagocyte by the parallelogram of forces, and the dynamics of a particle. Let not the unmathematical be alarmed; our knowledge of protoplasmic movement has hardly got to that stage, and my title perhaps conveys a notion of accuracy which is wholly illusory.

At the same time a purely physical explanation has been attempted by Bütschli,* who was led from his researches on the protozoa to the conclusion that protoplasm had the structure of a delicate froth rather than that of a definite network. He thought it possible that a similarly delicate froth produced by artificial means might show similar movements. After many unsuccessful attempts he met with a satisfactory method; a small quantity of potassium carbonate slightly moistened is rubbed into a paste with a drop of thickened olive oil. A portion of this paste is placed on the under surface of a cover-slip, and mounted in water. At the moment of contact a number of minute oil drops separate off and become converted into foam drops. These drops imitate both the streaming and amœboid movements of protoplasm with such accuracy that skilled observers have frequently been unable to say whether they were looking at artificial or natural protoplasm. The formation of these forms probably depends on the presence of small quantities of the salt dissolved in the oil; the addition of the water, in which the salt is more readily soluble than in oil, causes a flow from the latter to the former—a process which Lord Rayleigh has called "desolution." On this desolution, then, the streaming movements depend.

Applying this for instance to the conditions attending the extrusion of pseudopodia in amœbæ or the streaming of a plasmodium, it is interesting to note that the streaming does not start from the hind end and advance to the portion of the organism which is pushing forward, but starts at the moving point and extends backwards. That is, it occurs just as if the extension current existed as the result of diminution of the surface tension at the anterior end. Now a similar condition governs the streaming of the oil foam, namely diminution of the surface tension at the point to which the streaming is taking place.

But these be physical subtleties into which we must not go further. It is, of course, impossible to explain all protoplasmic movements on purely physical grounds, at present at least. But whatever be the ultimate origin of the movements we are about to discuss, certain it is that they are carried out by a physical mechanism, just as the behests of the human brain are most frequently executed by levers of the third order. Simple physical laws, too, probably directly determine many of the less vital processes, such as the symmetrical arrangement of many shells. Bütschli's work then, though not conclusive is highly suggestive.

Let us approach the subject to-night from a different standpoint; let us investigate how the wandering cell reacts to external stimuli rather than how its internal machinery compasses that reaction. For of the former question we are beginning to know something—the latter is simply a series of "guesses and gaps."

II. The Stimuli to which Sporadic Mesoblast reacts.

(i) *Light*.—Wandering cells are rarely exposed to the direct influence of light in the normal economy, but that this stimulus is not without effect is well shown among certain unicellular animals and plants.† Thus, Engelmann found that *Euglenæ* among the Flagellates accumulate on that side of a vessel which is exposed to light; if the vessel be illuminated by a spectrum they congregate between the lines F and G, that is to say, especially in the blue.

If the light be increased in intensity, a point is reached at which the organisms flee before it. To green algæ the red and violet of the spectrum are the most attractive, in fact among the algæ of different hues the complementary colour of their own is the one around which they accumulate.

But this effect of light appears to be dependent on the liberation of oxygen. If we place chlorophyll grains in the fluid containing bacteria, nothing happens so long as the preparation is kept in the dark. But as soon as it is illuminated, that is, when oxygen is being liberated by the action of the grains the bacteria rapidly proceed towards them. When the tension of the oxygen becomes too high, the organisms retire from the field.

And Marshall Ward* had shown in a beautiful research that if bacteria cannot escape before strong light they perish. Thus, if a stencil-plate be placed over a gelatine culture of bacteria and the whole exposed to direct sunlight or the electric arc, subsequent incubation shows that where the light has penetrated the culture the organisms are killed; so that the letter which was on the stencil is now photographed, as it were, on to a background of bacterial colonies. And applying the spectroscope he found that rays to the red side of the line F had no bactericidal effect, while blue and violet are distinctly deadly. The effect is at its maximum just beyond the visible spectrum, and (a point of special interest) extends far into the invisible ultra-violet rays.

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So that all these experiments may be summarised by saying that light in moderation has an attraction for motile protoplasm, but that in greater intensity it repels or even kills. And both these results seem to be due to the accompanying liberation of active oxygen.

Air.—Now, that air or oxygen has a distinct effect on the movements of wandering cells is well established. Ranvier deprived a leucocyte of oxygen by imprisoning it in a microscope cell through which indifferent gases could be passed. He found it did not become spherical as it would were all stimuli removed, but threw out delicate processes as though seeking for oxygen, these processes being most numerous on the air-side of the preparation. The dead cell on the other hand is spherical.

The effect of exposure to air is best seen among the more delicate cells of invertebrate blood. Taking the case of molluscs we find there is some dispute as to the immediate effects. According to Cattaneo§ there is an instant withdrawal of the pre-existing pseudopodia; at any rate it is agreed|| that this is rapidly followed by the throwing out of processes, many of them being extremely delicate plate-like expansions called sarcoidal processes. These expansions differ from the pseudopodia in being non-contractile and in never being withdrawn into the cell after they are once extruded.

My own observations, so far as they go, would support Cattaneo's contention that the plate-like expansions are of later formation than the pseudopodia, but I am strongly of opinion that many of the later stages are due to irritation by contact with foreign material, such as the microscope slide and especially the pipette. It is under this head that we will consider them. Semper, for instance, points out that the cell with spiky processes is only seen when the blood is withdrawn by a pipette, and never if the blood is allowed to drop on to the slide direct from the animal. He concludes that these processes are an artificial product, the result of anything which admits a current of air. But is it not rather an assumption that it is due to air and not to a stimulus by foreign matter? The blood dropped from the animal has also been in contact with air but has met with less stimulus by contact than blood taken up in a pipette. I shall venture, then, provisionally to classify the effects of oxygen on these cells as follows:

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Inert foreign matter.—The phenomena exhibited by leucocytes towards inert foreign matter is best summed up by Massart and Bordet: "When leucocytes meet a resistant surface, they react by offering as large a surface of contact as possible." We can see how this generalisation explains the inclusion of foreign particles, such as carmine, charcoal, globules of milk, or dead micro-organisms. If the cell offer the largest surface of contact to a particle of less diameter than itself it must surround that particle to do so. But if the foreign body be a plane surface such as a microscope slide, the cell can only spread itself out as a very fine film. And to this cause may be referred the delicate sarcoidal processes which are formed when a drop of invertebrate blood is shed, for they will always be found most numerous, if not confined to, the layer of fluid in contact with the slide on which they are placed. I think this justifies my contention that their formation is due to contact rather than to oxygen.

This property, moreover, enables leucocytes to get through the finest pores, and is of essential value in the manœuvres of diapedesis. Such substances as elder pith or even densely compact tissues like bone or ivory can be penetrated by virtue of this mechanism.

In several cases this "reaction by greatest surface" is assisted and intensified by plasmodium formation; thus a thorn introduced into *Astropecten* is far too large for one cell to surround, but several cells fusing together the foreign body is shut off from the general cavity.

Heat.—Heat as a stimulus to the sporadic mesoblast is necessarily limited in application. All movements we are discussing stop at freezing-point, and very slight heat will, of course, totally disorganise protoplasm. But the best example of its action is that recently adduced by Ranvier.* He had described certain very large plasma cells in the peritoneum of rabbits and frogs, which are also readily found in the periesophageal membrane in the frog, being brought out by staining with methyl violet 5β. These he terms "clasmatocytes"—they have many granules and very long processes; he regards them as derived from wandering cells which have increased in size and lost the power of movement. But in inflammation they may again come into activity, the long processes rapidly budding off to contribute to the formation of pus-cells.† Normally they are not found in the blood or large lymphatics, but he has devised a method by which he believes they may be formed artificially. A drop of frog's lymph is placed in a microscope cell with a scanty supply of air, and the whole treated on the warm stage to 15° C. and then to 25° C. to fix it. At the bottom of the cell certain leucocytes may be observed to begin to spread themselves out into long ramifying processes and plates of such extreme delicacy that it is hard to trace them until they have been stained with osmic acid and methyl violet. The processes are frequently distinctly granular. These curious cells he designates "clasmatocytes in vitro." I repeated these experiments some time ago, but could not satisfy myself that these pigmented granules were not mere products of the degeneration of the cell just as we know pigment to be formed in the cells of crab's blood during clotting.‡ Whether they really represent the elements from which the clasmatocyte is formed or no is doubtful, but this much is clear—that under the gentle and gradual application of heat the normal tendency of the leucocyte to offer a large surface of contact to resistant surface has been greatly increased. Sarcoidal plates of far greater delicacy and extent than usual are formed under such conditions.

Chemiotaxis.—We now come to the most important method in which sporadic mesoderm reacts—namely, the attraction exercised over it by definite chemical substances.

The first steps in this subject were worked out among the minute organisms. Engelmann, in 1880, had noticed that these organisms were attracted from a distance towards substances which they required. Four years later Stahl found that a decoction of dead leaves will attract myxomycetes, while solutions of salt or sugar will repel them. A plasmodium placed between water from which the oxygen has been driven off by boiling and ordinary oxygenated water will creep away from the former and towards the latter. All these phenomena were referred to the nutritive needs of the organisms. But Pfeffer§ found this explanation would not cover all the facts, and in a series of brilliant researches placed the matter on a much securer basis. He showed that the female organs of some cryptogams would yield chemical substances which would strongly attract the spermatozooids. Thus malic acid or the malates will attract the spermatozooids of ferns, causing them to ascend capillary tubes for a considerable distance; and malic acid could always be found round the archegonia of the same species. For *Funaria* cane-sugar is the attracting sub-

stance, and closely allied bodies such as glucose, levulose, or lactose produce no such effect.

This attraction may be strong enough to cause a cautious micro-organism to run into danger with the temerity of mere man. Thus spirilla will dart into too highly concentrated solutions of sugar and glycerine to which attracting substances had been added, a medium in which they inevitably perished.

All these phenomena Pfeffer classed under the term chemiotaxis; positive or negative according as the substance exercised attraction or repulsion. It is noteworthy that a negative chemiotaxis may become positive in face of a more urgent need of the organism. Thus Stahl found that a plasmodium of *Fuligo* was at first repelled from a 2 per cent. solution of common salt, but after a time (especially if it lacks water) it will adapt itself and dip its pseudopodia into this solution. It would probably be more correct to say that the need for water was stronger than the negative chemiotaxis still exercised by the salt.

Perhaps the most startling fact adduced by Pfeffer is that Weber's Law is as true for chemiotaxis as for our own sensations—such as the highly specialised sense of sight—that is, when excitation is increased in geometrical progression, the sensation is increased in arithmetical progression.

It was not long before the principles of chemiotaxis were applied to some of the more apparently mysterious properties of leucocytes, and with rich result.

In 1888 Leber showed that a crystalline product known as phlogosin, prepared from *Staphylococcus aureus*, if placed in glass tubes and inserted into the anterior chamber of the eye would rapidly attract leucocytes towards it. Two years later Massart and Bordet* published some interesting papers on this point, from which it appears that culture fluids of various microbes, especially *Staphylococcus pyogenes albus*, would readily attract the leucocytes of a frog.

Experimenting with the oxidation products of albumen they found that leucin exerts a positive chemiotaxis, while substances like creatin or allantoin have no attraction. This fits in very well with Sheridan Lea's view that leucin, being a substance of relatively high potential energy compared with creatin, may have an anabolic value as a food-stuff, and is not a mere antecedent of urea.

Similar facts have been proved for mammalian leucocytes. Proteids extracted from Friedländer's pneumococcus, and from *Bacillus pyocyaneus* exert an attraction for them. Buchner's contention that only dead or injured bacilli can produce this effect is contradicted by the clinical observations of von Limbeck on erysipelas and croupous pneumonia. In the former disease an increase in the number of leucocytes is of constant occurrence, and reaches its height while the blood is swarming with living streptococci; but after the crisis, when only dead microbes are to be found, the number of leucocytes rapidly falls. Moreover, in pneumonia this fall is sudden in the cases ending by crisis and gradual in those ending by lysis.

It is usually stated that the most virulently pathogenic microbes, so far from attracting the leucocytes exert a negative chemiotaxis upon them. In support of this it is pointed out that we may get an inflammatory reaction, as in malignant pustule, which takes the form of an edema practically free from cells. But this need not be the result of the cells failing to arrive at the focus of inoculation; it may simply be due to their destruction as fast as they arrive. Kanthack and Hardy† have shown that in the cases both of pathogenic and non-pathogenic bacilli the cells come to the invaded site, but that in the former instance very rapid destruction and disintegration of those cells follows. Hence they conclude that we cannot refer the paucity of cells present in such cases to negative chemiotaxis until we know something of the rate at which destruction occurs. Positive chemiotaxis apparently leads the cell on to its death under these circumstances. If the virus be attenuated we certainly find that positive chemiotaxis is at work. Thus Metschnikoff injected virulent anthrax into one ear of a rabbit where the typical exudation followed; into the other he injected attenuated anthrax, which provoked a dense accumulation of leucocytes. This certainly favours Kanthack and Hardy's view that the serous exudation is due to destruction of the cells rather than to their repulsion by negative chemiotaxis.

Of course, even in the absence of leucocytes the organism is not wholly defenceless, since the antitoxins, wherever produced, are to be found in the serum.

Whatever may be the case with pathogenic microbes, it certainly appears that some substances do repel leucocytes without destroying

* *Comptes Rendus*, 1891, p. 688.

† *Loc. cit.*, p. 922.

‡ Haycroft and Carler, *Proc. Roy. Soc. Edin.*, 1888.

§ *Untersuchungen Bot. Inst. zu Tübingen*, vol. i, 1884.

* See *Ann. Inst. Pasteur*, 1891.

† *Journal of Physiology*, xvii.

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This property, moreover, enables leucocytes to get through the finest pores, and is of essential value in the manoeuvres of diapedesis. Such substances as elder pith or even densely compact tissues like bone or ivory can be penetrated by virtue of this mechanism.

In several cases this "reaction by greatest surface" is assisted and intensified by plasmodium formation; thus a thorn introduced into *Astropecten* is far too large for one cell to surround, but several cells fusing together the foreign body is shut off from the general cavity.

Heat.—Heat as a stimulus to the sporadic mesoblast is necessarily limited in application. All movements we are discussing stop at freezing-point, and very slight heat will, of course, totally disorganise protoplasm. But the best example of its action is that recently adduced by Ranvier.* He had described certain very large plasma cells in the peritoneum of rabbits and frogs, which are also readily found in the periesophageal membrane in the frog, being brought out by staining with methyl violet 5β. These he terms "clasmatoctytes"—they have many granules and very long processes; he regards them as derived from wandering cells which have increased in size and lost the power of movement. But in inflammation they may again come into activity, the long processes rapidly budding off to contribute to the formation of pus-cells.† Normally they are not found in the blood or large lymphatics, but he has devised a method by which he believes they may be formed artificially. A drop of frog's lymph is placed in a microscope cell with a scanty supply of air, and the whole treated on the warm stage to 15° C. and then to 25° C. to fix it. At the bottom of the cell certain leucocytes may be observed to begin to spread themselves out into long ramifying processes and plates of such extreme delicacy that it is hard to trace them until they have been stained with osmic acid and methyl violet. The processes are frequently distinctly granular. These curious cells he designates "clasmatoctytes in vitro." I repeated these experiments some time ago, but could not satisfy myself that these pigmented granules were not mere products of the degeneration of the cell just as we know pigment to be formed in the cells of crab's blood during clotting.‡ Whether they really represent the elements from which the clasmatoctyte is formed or no is doubtful, but this much is clear—that under the gentle and gradual application of heat the normal tendency of the leucocyte to offer a large surface of contact to resistant surface has been greatly increased. Sarcoidal plates of far greater delicacy and extent than usual are formed under such conditions.

Chemiotaxis.—We now come to the most important method in which sporadic mesoderm reacts—namely, the attraction exercised over it by definite chemical substances.

The first steps in this subject were worked out among the minute organisms. Engelmann, in 1880, had noticed that these organisms were attracted from a distance towards substances which they required. Four years later Stahl found that a decoction of dead leaves will attract myxomycetes, while solutions of salt or sugar will repel them. A plasmodium placed between water from which the oxygen has been driven off by boiling and ordinary oxygenated water will creep away from the former and towards the latter. All these phenomena were referred to the nutritive needs of the organisms. But Pfeffer§ found this explanation would not cover all the facts, and in a series of brilliant researches placed the matter on a much securer basis. He showed that the female organs of some cryptogams would yield chemical substances which would strongly attract the spermatozooids. Thus malic acid or the malates will attract the spermatozooids of ferns, causing them to ascend capillary tubes for a considerable distance; and malic acid could always be found round the archegonia of the same species. For *Funaria* cane-sugar is the attracting sub-

stance, and closely allied bodies such as glucose, levulose, or lactose produce no such effect.

This attraction may be strong enough to cause a cautious micro-organism to run into danger with the temerity of mere man. Thus spirilla will dart into too highly concentrated solutions of sugar and glycerine to which attracting substances had been added, a medium in which they inevitably perished.

All these phenomena Pfeffer classed under the term chemiotaxis; positive or negative according as the substance exercised attraction or repulsion. It is noteworthy that a negative chemiotaxis may become positive in face of a more urgent need of the organism. Thus Stahl found that a plasmodium of *Fuligo* was at first repelled from a 2 per cent. solution of common salt, but after a time (especially if it lacks water) it will adapt itself and dip its pseudopodia into this solution. It would probably be more correct to say that the need for water was stronger than the negative chemiotaxis still exercised by the salt.

Perhaps the most startling fact adduced by Pfeffer is that Weber's Law is as true for chemiotaxis as for our own sensations—such as the highly specialised sense of sight—that is, when excitation is increased in geometrical progression, the sensation is increased in arithmetical progression.

It was not long before the principles of chemiotaxis were applied to some of the more apparently mysterious properties of leucocytes, and with rich result.

In 1888 Leber showed that a crystalline product known as phlogosin, prepared from *Staphylococcus aureus*, if placed in glass tubes and inserted into the anterior chamber of the eye would rapidly attract leucocytes towards it. Two years later Massart and Bordet* published some interesting papers on this point, from which it appears that culture fluids of various microbes, especially *Staphylococcus pyogenes albus*, would readily attract the leucocytes of a frog.

Experimenting with the oxidation products of albumen they found that leucin exerts a positive chemiotaxis, while substances like creatin or allantoin have no attraction. This fits in very well with Sheridan Lea's view that leucin, being a substance of relatively high potential energy compared with creatin, may have an anabolic value as a food-stuff, and is not a mere antecedent of urea.

Similar facts have been proved for mammalian leucocytes. Proteids extracted from Friedländer's pneumococcus, and from *Bacillus pyocyaneus* exert an attraction for them. Buchner's contention that only dead or injured bacilli can produce this effect is contradicted by the clinical observations of von Limbeck on erysipelas and croupous pneumonia. In the former disease an increase in the number of leucocytes is of constant occurrence, and reaches its height while the blood is swarming with living streptococci; but after the crisis, when only dead microbes are to be found, the number of leucocytes rapidly falls. Moreover, in pneumonia this fall is sudden in the cases ending by crisis and gradual in those ending by lysis.

It is usually stated that the most virulently pathogenic microbes, so far from attracting the leucocytes exert a negative chemiotaxis upon them. In support of this it is pointed out that we may get an inflammatory reaction, as in malignant pustule, which takes the form of an oedema practically free from cells. But this need not be the result of the cells failing to arrive at the focus of inoculation; it may simply be due to their destruction as fast as they arrive. Kanthack and Hardy† have shown that in the cases both of pathogenic and non-pathogenic bacilli the cells come to the invaded site, but that in the former instance very rapid destruction and disintegration of those cells follows. Hence they conclude that we cannot refer the paucity of cells present in such cases to negative chemiotaxis until we know something of the rate at which destruction occurs. Positive chemiotaxis apparently leads the cell on to its death under these circumstances. If the virus be attenuated we certainly find that positive chemiotaxis is at work. Thus Metschnikoff injected virulent anthrax into one ear of a rabbit where the typical exudation followed; into the other he injected attenuated anthrax, which provoked a dense accumulation of leucocytes. This certainly favours Kanthack and Hardy's view that the serous exudation is due to destruction of the cells rather than to their repulsion by negative chemiotaxis.

Of course, even in the absence of leucocytes the organism is not wholly defenceless, since the antitoxins, wherever produced, are to be found in the serum.

Whatever may be the case with pathogenic microbes, it certainly appears that some substances do repel leucocytes without destroying

* *Comptes Rendus*, 1891, p. 688.

† *Loc. cit.*, p. 922.

‡ Haycraft and Carler, *Proc. Roy. Soc. Edin.*, 1888.

§ *Untersuchungen Bot. Inst. zu Tübingen*, vol. i, 1884.

* See *Ann. Instit. Pasteur*, 1891.

† *Journal of Physiology*, xvi.

them. Thus, lactic acid, potassium chlorate, bile, quinine, and many other bodies have a marked negative chemiotaxis for them (Gabritschewsky). According to Binz, diaporesis ceases through a frog's mesentery when wetted with quinine solution, yet it has been proved by Disselhorst that the leucocytes were not paralysed, for removed from their vessels they showed characteristic activity. This strongly marked negative chemiotaxis exerted by quinine seems specially difficult to understand in face of its beneficial action in malarial disorders.

Chemiotaxis is apparently of value in the regulation of the internal mechanism of the cell, especially in adjusting the relations of nucleus and cytoplasm. But this lies outside the limits of our discussion, and I must content myself by referring those curious in such matters to Verworn's paper.*

The theory of chemiotaxis, we must remember, is not an explanation but a classification. Its great value is that it brings a number of apparently diverse phenomena into line, and narrows the problem within more definite limits; but the delicacy of the chemical processes which must underlie it almost transcend our thought.

We may state then in general terms that the two great methods by which sporadic mesoblast reacts to stimuli are—

(i) That it offers as large a surface of contact as possible to a foreign body.

(ii) That it is attracted towards certain definite chemical substances and repelled by certain others.

We have seen that the reaction to the influence of light, air, and heat cannot be isolated from these two. Many other physical changes in the environment—for instance, pressure or rapidity of movement in the liquids or their electrical conditions, probably produce their effect, but on these points we have very little clear information.

(To be continued.)

A Case of Wandering for Fractured Patella in a Man aged 70.

By F. C. WALLIS, F.R.C.S.,

Assistant Surgeon to Charing Cross Hospital, and to the Metropolitan Hospital.



T, æt. 70, was admitted into the Metropolitan Hospital on June 25th, suffering from a fractured patella on the right side.

Patient said that he was walking along, when he felt something snap in his joint; he fell down, and was unable to rise again.

On admission the right knee-joint was seen to be considerably distended with fluid, and on examination the patella was found to be fractured transversely, the fractured ends being separated to the extent of one inch.

On June 26th the patient was taken to the theatre and put under chloroform; the skin all round the joint was vigorously scrubbed with a nail-brush and 1–20 carbolic acid lotion until the skin was almost denuded of epidermis; the knee had been previously shaved.

A longitudinal incision was then made in the middle line of the joint, and the fractured bone came into view. The lower fragment was comminuted by two longitudinal fractures; one of the pieces, being quite small and almost detached, was removed.

On attempting to bring the fractured ends into apposition it was found that the stretched aponeurosis intervened and folded up between the fragments. The aponeurosis was divided and separated from the rough fractured surface of the patella, which had in some places transfixed the aponeurosis.

The fragments were then wired together by two pieces of rather fine wire, great care being taken to keep as far away from the articular surface as possible. The joint was thoroughly washed out with perchloride solution 1–3000, and then the aponeurosis was brought together with a few sutures. The skin was united by a continuous horsehair suture, the wound dried with absolute alcohol, and a collodion scab was placed over the incision. A good pad of blue wool, bandage and back splint completed the dressing.

The progress of the case was uninterruptedly good. In three days the patient was sitting up in bed; on the eighth day the stitches

were removed; on the seventeenth day he was up and getting about the ward on crutches, the knee still having a back splint on.

He left the hospital on August 1st,—just under five weeks,—walking with crutches and able to bend the knee.

When seen on August 28th he was able to walk well with a stick.

When last seen he was able to walk up and down stairs without any support, and could flex the knee right up.

Remarks.—I had no hesitation in strongly recommending this patient to submit himself to the operation. I felt there was grave risk of some lung trouble intervening, if at this man's age he were to lie on his back for some weeks, more especially as he was subject to bronchitic attacks. Under the circumstances he sat up in bed three days after the operation, and was not troubled in his breathing at all.

It seems almost unnecessary to enumerate the advantages of an operation of this sort over the old-fashioned tedious and unsatisfactory treatment by splints, strapping, &c.

The saving of time—six weeks to two months as opposed to twelve to eighteen months, with a doubtful result at the end of this long period,—seems to me to be a strong reason, apart from others, for operating early.

Again, the "sandwiching" of the aponeurosis between the fractured ends of the patella, when the fragments were apposed, is probably a very constant factor, and one that accounts for a great many cases of non-union of the patella when treated expectantly.

It is not necessary in recent cases to use very stout wire, and therefore it is not necessary to bore a big hole through the bone, at the risk of splintering the fragments still further, with the ultimate risk of the patella becoming ankylosed to the femur.

I think it is a good plan to gently move the patella from side to side occasionally after the end of the first week.

The fact that certain early cases of wiring suppurred should not be any bar to the operation now.

Aseptic surgery as at present understood and practised is a very different thing to what was practised ten years ago even.

If a patient is distinctly alcoholic I should hesitate to recommend the operation, and there are certain isolated cases with peculiar features of their own where it may be deemed inadvisable to operate. The following case is an example:

An old woman æt. 72 came to my out-patient department complaining of pain in the knee, which she had fallen on three days previously—she had been walking about and going up and down stairs. She had fractured her patella, but the aponeurosis was not stretched or torn and the fragments were not separated. She was put to bed and treated by Sir William Savory's method of rest on a pillow, with ultimate good results as far as union is concerned.

But, generally speaking, I believe the operation to be of the greatest benefit to the patient, and when the proper precautions are observed the risk of suppuration is so small that it may be disregarded.

"M.D. Lond."



OV. 1st.—Think I ought to go up for the M.D., so send in cheque for £5 and certificate of "excellent moral character." N.B.—I'll have this framed when they send it back; no knowing, may never be able to get another, surprised enough at getting this. Notice that Clay Shaw lectures on Psychology every Monday at Banstead and every Wednesday at Bart's.

Nov. 2nd.—No good beginning to read now, should forget it all before Dec. 2nd, so decide on an easy week to get brain clear and ready. Must let my brain have complete rest and be free from all care, so wire for Jones and Robinson to dine with me at the "Cri" and go to "Palace" after.

Nov. 3rd.—Don't feel very well this morning, "general feeling of malaise." Wonder if I'm going in for some beastly disease; take my temperature—normal. What can be the matter? surely not those eggs we had at a coffee-stall at 5 a.m. this morning—they tasted all right; must have smoked too many cigarettes. What a fool I was! Ring for beer, and resolve to smoke cigars in future.

Nov. 10th.—Have kept my brain as free from care as possible, and amused myself with Jones and Robinson every night since last entry. Unfortunate thing Jones always will choose such rotten places to dine at; I always get a headache next morning when I eat badly-cooked food. Must choose place myself in future.

Nov. 11st.—Been down to Banstead to Clay Shaw's grind.

* *Pflüger's Archiv*. li.

Lunies made me roar with laughter, couldn't listen at all to what Shaw said, they were so funny. Must attend this class regularly.

Nov. 13th.—Shaw's grind at Bart's nothing like so jolly as the Banstead one. Horribly steep, and not in the least amusing. Talked about choice between bitter and sweet orange, and a lot of stuff about motor ideas, muscularity of thought, &c. Told us to read Wundt and Ziehen.

Nov. 15th.—Began reading Sully and Ziehen with a dash of Wundt, Tuke's dictionary, and Bevan Lewis thrown in. Don't think any of them know what they do mean. At all events jolly sure I don't.

Nov. 28th, *Thursday*.—Work telling on me fearfully, evenings with Jones and Robinson the only things that keep my pecker up. Shall be glad when this strain is over. Thank goodness exam begins on Monday. Reading Osler 120 pages a day, and corresponding quantities of Ziehen and Sully.

Nov. 29th, *Friday*.—Friend tells me to read Gowers on Brain; do so—237 pages in two days. Must have nearly reached "breaking strain." Think I'm losing my sense of identity.

Hooray! suddenly realised scheme of mind. Thus, mass of ideas in head, all struggling to "rise into consciousness," successful idea chosen according to definite laws. This is "thought," it may or may not produce "concomitant motor idea" which will result in action. *Ergo*, thoughts and actions all result of definite laws, can't be modified by will. No longer my fault if I do anything wrong, *can't* disobey laws that govern consciousness. Delightful theory. No longer my responsibility whether I get through M.D. or not. Off to bed with a clear conscience. Nothing that I do or think can be my own fault.

30th, *Saturday*.—Have asked friend who looks as if he knew all about it, to dine at home with me, and go over Shaw's notes. We do so for three hours. Certain things neither of us understands, (privately don't think the examiners do, but learn up their own sentences in hope of being able to use them as if we understood them).

Dec. 2nd, *Monday*.—Hasty breakfast; look over Shaw's notes in hansom going down to exam.

10 a.m.—Enter exam. room and seize paper hastily—

"Give a brief account of Weber's Law as to the relation between stimulus and sensation, and of the facts on which it is based. Has subsequent investigation tended to confirm the Law?" My eye! Know one thing, stimulus of that paper has produced sensation quite out of relation to stimulus, and with a disproportionately negative emotional tone.

Question 2: "*Recent experiments on an act of attention.*" Great Scott!

Question 3: "*Bring out the most important factors in the consciousness of self and personality. How would you explain the phenomena of double consciousness and altered personality.*" "Phenomena of double consciousness," phew! that's a nasty jar—means "e dunno where 'e are," I suppose. Remember that Robinson didn't seem to know where he was on Thursday night, but the only phenomena about that were that he would ride the hansom horse, and that we had greatest difficulty in preventing his being "run in" when the police came; on second thoughts don't think even this was phenomenal.

Question 3: "*Describe normal power of volition; show relation to primitive forms of movement.*" Worse and worse. Glance rapidly through remaining four questions, and see "*Defects of speech,*" "*Evolution of mind from infant to adult state,*" "*Define subject consciousness and object consciousness.*" At last finish up with "*Hypnotism.*" Remember with joy that I did go to see Kennedy at the Aquarium, though Jones said it was rot; however, in any case I don't seem to find it much use here. Sure my answers are at least original, never thought of them myself till a minute before I wrote them. (*Private opinion* is that examiners themselves couldn't answer questions; only ask 'em because they know M.D. men are a cute lot, and hope some Johnny will give 'em a useful hint.)

After lunch write three hours' commentary on case of empyema. Any fool could do that, but wish I hadn't eaten so much "pheasant and chips" for lunch; always like to "after dinner sleep awhile," and can't do that here, seats are so uncomfortable.

Dec. 3rd, *Tuesday*.—Six hours' medicine papers. Exhausted at the end of it. Took a tonic—

℞ Sp. Vin. Frum. ʒij.
Aq. 'pollinar. ad ʒvj.
M. ft. haust.

Sig.—The draught to be taken at once, and repeated every sixth minute until the depression passes off.

(N.B.—Never known this tonic fail.)

See by notice-board that I have to go to London Hospital for "cases" on Thursday at 1 o'clock.

Dec. 5th.—Go to London Hospital and see two cases—half an hour each. Haven't a ghost of a notion what's the matter with either of them, but write rigmarole about them for three hours, and then go home. Before going home, however, compare notes with another man who has had same cases. He seems to have made a hash of it, poor chap; but no! he says the nurse told him while he was examining eyes with ophthalmoscope. Wish to goodness she'd told me!

Vivas on Friday, December 13th.

Dec. 18th.—Result: many happy returns of the day in both. Worst of these cheap exams. I can't use the M.D., so use the D—m(n). Not quite sure which is the more useful.

Notes.

IT APPEARS that the rumour about the Third Examination of the Conjoint Board to which we referred last month was well founded. A Joint Committee of the two Colleges has been sitting for some weeks past, and has just reported to the Councils of the Colleges in favour of extensive modifications in the Examinations. The chief recommendation is the abolition of the Third Examination as a *separate* examination, and the incorporation of the subjects of it with those of the fourth, so that in future there shall be three examinations only, as under the old four years' course.

* * *

OTHER proposed changes are—

1. That the time of the clinical part of the examination in each subject be extended to thirty minutes.
2. That the interval between the Anatomical and Physiological examination and the final be (as in the four years' course) two years instead of three.
3. That the examination in midwifery may be passed at any time after the completion of the fourth year of study, provided the anatomical and physiological examination has been completed *one* year previously.
4. That the subject of pharmacology may be passed at any time after the completion of the fourth year provided the anatomical and physiological examination has been passed.
5. That the examination in practical pharmacy may be passed at any time after registration as a medical student.
6. That no candidate be referred for longer than three months, except under the special resolution of the examiners.
7. That the subject of elementary anatomy be eliminated from the first examination.

* * *

THESE are very important recommendations, and we cordially approve of them. They have been adopted with only one slight modification by the College of Physicians, and subsequently by the Council of the College of Surgeons. They have thus become law, and a much more thorough and satisfactory course of study and examination will be the result.

* * *

COMING to details. The final examination in medicine will consist of:—(a) Two papers, of five questions each,

on the Principles and Practice of Medicine, including Medical Anatomy, Pathology, Therapeutics, Forensic Medicine, and Public Health; three hours allowed for each paper. (b) Clinical Examination of patients for thirty minutes, divided between two examiners, after which the candidate will be required to write prescriptions, for which a quarter of an hour will be allowed. (c) *Viva voce* Examination in General Medicine for twenty minutes.

* * *

IN SURGERY, the examination will consist of: (a) A paper of six questions on the Principles and Practice of Surgery, including Surgical Anatomy and Pathology; three hours. (b) Clinical Examination of patients for thirty minutes, divided between two examiners. (c) *Viva voce* examination in three parts: (1) Surgical Anatomy, Operations and Apparatus, for fifteen minutes. (2) and (3) Principles and Practice of Surgery and Pathology, ten minutes each. (d) Examination of Microscopical Specimens.

* * *

IN MIDWIFERY, there will be no alteration on the plan in force under the four years' curriculum.

* * *

DR. CHATAWAY has been appointed Assistant Examiner in Chemistry to the University of London.

* * *

THE DEPUTATION which interviewed the Duke of Devonshire and Sir John Gorst on November 28th, upon the subject of reform of the University of London, was one of the most influential deputations which has ever been got together. It included delegates from *every one* of the Institutions or Bodies interested in the formation of a Teaching University in London, and a most unanimous expression of opinion in very forcible terms was laid before the Duke.

His reply was not very encouraging, but in spite of this we cannot help thinking that such an unanimous and weighty opinion must influence the Government favorably. We certainly hope so.

* * *

THE HOSPITAL AUTHORITIES have decided to combine the duties of the offices of Medical Registrar and Demonstrator of Morbid Anatomy, and to appoint two gentlemen to the combined offices. At the moment of going to press we hear that Dr. CALVERT and Dr. GARROD have been appointed to these combined posts.

* * *

IT MUST be in the highest degree gratifying to Bart.'s men, teachers, students and candidates alike, that out of ten who went up for the final Fellowship in November from Bart.'s, nine were successful. Particularly so when we remember that in May the result was exactly the same. Thus on two successive occasions, 90 per cent. of Bart.'s candidates have passed this severe examination.

* * *

WE call attention to the announcement on our front page in regard to the cover. We feel sure that many men will be

glad to have their copies of the JOURNAL bound as a memento of their days at Bart.'s.

* * *

WE CANNOT refrain from making a special comment on our late successes in the London M.B. Final, and at the same time especially congratulating Mr. S. GILLIES on his most brilliant performance. As will be seen by the list published in another column Mr. Gillies has taken the Medal and Scholarship (1st place) in Obstetric Medicine, the Medal (2nd place) in Forensic Medicine, and has the 3rd place (bracketed) in Medicine.

Our results in the Honours list tabulated are—

	1st Class Honours.	2nd Class Honours.	3rd Class Honours.
Medicine . . .	1	3	1
Forensic Medicine . . .	*1	1	1
Obstetric Medicine . . .	†2	2	0

* Medal. † Medal and Scholarships.

* * *

THOSE who applied to the Librarian for a reproduction of Mr. E. C. Fincham's autotype of Rahere and found the supply unequal to the demand will be glad to hear that more copies have now been issued.

* * *

OUR energetic Matron read recently at the Matrons' Council an admirable paper urging the registration of certificated nurses by the State. She advocated a preliminary examination, a uniform three years' curriculum, and a central board of examiners, and after some discussion a resolution in favour of such a system was unanimously adopted.

* * *

WE REGRET that the following names were omitted in the list of those who obtained the M.R.C.S., L.R.C.P., in October last:—T. A. Bowes, M.B. Cantab., G. Cawley, E. C. Fincham.

* * *

E. C. FINCHAM has been elected a member of the Royal Photographic Society.

* * *

BART.'S MEN, past and present, will be glad to hear that Dr. Brunton's Harveian Oration for 1894, *Modern Developments of Harvey's Work*, has been issued as a bound pamphlet by Messrs. Macmillan and Co.

* * *

DR. WALDO has issued a special report upon the overcrowding of the Salvation Army Shelter, which will interest any students of public health. The case was concluded on November 21st, the magistrate prohibiting the recurrence of the nuisance, but adding that he himself could not convict unless the number admitted exceeded 550. It was contended that the cubical space was only sufficient for 400, and as nearly twice that number had frequently been accommodated, Dr. Waldo has done good work in reducing the overcrowding.

We hear that several of our dressers and clerks have been down to see the Editor of the *St. George's Magazine* in order to ascertain the whereabouts of a certain hospital which offers rest to the weary.

The following extract from the *St. George's Magazine* explains. "Our entry of students this session has reached . . . fifty-eight. . . . It is partly owing to our limited number that our opportunities in the wards are so exceptional. Instead of being, *as is elsewhere the case*, two or three dressers to one patient, we are in the habit of being dissatisfied if, as dresser or clerk, we do not have charge of five or six patients." (The italics are our own.) Oh happy "two or three dressers," would that I might have been one of you; then surely should I have escaped the toil of a Bart.'s dressership, and flat-foot and varicose veins would have spared me.

* * *

MORE than twenty men attended the Special Bacteriology Class in the Autumn Term. The popularity of this class is steadily increasing, and since the accommodation at their disposal is already fully used, it behoves the authorities to remember that the question of insufficient space will have to be faced almost immediately.

* * *

WE UNDERSTAND that our neighbours—Christ's Hospital—have now an extensive epidemic of measles, with a few cases of scarlet fever and diphtheria, and that it has been necessary to send most of the boys away.

* * *

ON DECEMBER 4TH a deputation from the Corporation of the City of London waited upon the Charity Commissioners in reference to Christ's Hospital, endeavouring to urge the Commissioners to recommend modification in the scheme of the School—the main point being an endeavour to secure that the School should continue at its present site, and not be removed to Horsham.

* * *

AT CAMBRIDGE, Dr. Donald MacAlister has been appointed a member of the Special Board for Medicine, Dr. A. Hill a member of the Agricultural Science Board, and Dr. L. E. Shore a member of the State Medicine Syndicate.

* * *

Mr. H. J. WARING has been elected Surgeon to Out-patients to the Belgrave Hospital for Children.

Pathological Laboratory.

THE next Course in Elementary and Sanitary Bacteriology will begin on January 14th at 2 p.m. The class will meet every Tuesday, Wednesday, and Thursday from 2 to 4 p.m. Gentlemen intending to take part in this Course are requested to communicate with Dr. Kanthack before the above date.

Amalgamated Clubs.

BOXING CLUB.

THE following gentlemen have been elected to occupy the various official positions in this club:

President.—Dr. Church.

Vice-Presidents.—P. Furnivall, Esq., F.R.C.S.; A. N. Weir, Esq., F.R.C.S.

Committee.—C. M. Welburn, A. H. Hawkins, T. Martin, T. Huddleston, W. R. Stowe, P. O. Andrew, J. S. Dunn.

Hon. Secs.—C. G. Meade, J. W. Hughes.

The Club Room will be open for practice on Mondays, Wednesdays, Thursdays, and Fridays from 3.30 to 6. Professor Alec Roberts will attend and give instruction on Fridays from 4 to 6.

RUGBY FOOTBALL CLUB.

THE Rugby Club are still continuing their successful career, for during the month of November four matches have been played, 2 won and 2 lost.

The victories were against Upper Clapton, whom we beat by 5 tries to *nil*, and Rugby, whom we beat by 1 goal to *nil*.

The teams which beat us are Cooper's Hill and Wickham Park, the former beating us by 3 tries to *nil*, the latter by the narrow margin of 1 penalty goal to *nil*. From this it will be seen that the only team that has crossed our line is Cooper's Hill. During the latter part of the month we have been without the services of Cruddas.

The 2nd XV during the month of November have played four matches, of which we won 1 and lost 3. The win was against Wickham Park, whom we beat by 4 goals 7 tries to *nil*. When defeated by Upper Clapton our team was very weak, and the result was a defeat of 16 points to *nil*. Very even games against St. Thomas's and Guy's both ended in losses, the former by a dropped goal to a try, and the latter by 1 goal to *nil*.

BART'S 1ST XV v. UPPER CLAPTON.

Played at Upper Clapton on the 2nd of November before a good attendance of people; the game resulted in a win for us by 5 tries to *nil*. Of these tries Robbs scored three, Mason one, and Hawkins one, none of which were converted owing to the difficult angles. Just after half-time Ridout was injured, and was obliged to retire from the game. Weekes was taken out of the scrum to supply his place, and although one short our forwards still held them.

Team.—H. Bond (back); A. J. W. Wells, T. M. Body, C. A. S. Ridout, S. Mason (three-quarter backs); A. Hawkins, G. C. Marrack (half-backs); H. M. Cruddas, W. F. Bennett, C. H. D. Robbs, W. M. James, F. G. Wood, F. G. Richards, H. Weekes, C. H. Adams (forwards).

BART'S 1ST XV v. COOPER'S HILL.

Played at Cooper's Hill on the 9th of November in a gale of wind. Cooper's Hill kicked off, and in the first half scored one try, which was not converted. In the second half Cooper's Hill scored twice, but neither was converted. Had it not been for the splendid tackling of our forwards and of Bond, Cooper's Hill would have run their score up higher. Thus the match ended in a win for Cooper's Hill by 3 tries to *nil*.

Team.—H. Bond (back); A. J. W. Wells, T. M. Body, S. F. Smith, S. Mason (three-quarter backs); A. Hawkins, G. C. Marrack (half-backs); H. M. Cruddas, W. F. Bennett, C. H. D. Robbs, J. K. S. Fleming, W. M. James, H. C. Adams, F. J. Wood, F. G. Richards (forwards).

BART'S 1ST XV v. WICKHAM PARK.

Played at Winchmore Hill on the 23rd of November. Bart's were very poorly represented, Andrew, Cruddas, Bennett, Hawkins, and Adams being absent. As it was we were only beaten by the narrow margin of one penalty goal to *nil*.

Team.—H. Bond (back); A. J. W. Wells, T. M. Body, W. H. Randolph, S. Mason (three-quarter backs); T. Martin, G. C. Marrack (half-backs); C. H. D. Robbs, W. M. James, F. G. Richards, F. J. Wood, H. Weekes, A. L. Vaughan, J. C. S. Dunn, A. N. Other (forwards).

BART'S 1ST XV v. RUGBY.

On Saturday, 30th November, our team journeyed to Rugby, and played the above club in very favourable weather. Bart's were not fully represented, Andrew and Cruddas being absent. In the first half nothing was scored, although our forwards pressed their forwards all through. On crossing over we penned our opponents in their "25," and after several unsuccessful attempts on the part of the three-quarters, Hawkins got over the line and scored a try, which was easily

converted by Body; so we won a well-deserved victory by one goal to nil.

Team.—H. Bond (back); A. J. W. Wells, T. M. Body, W. H. Randolph, S. Mason (three-quarter backs); A. Hawkins, G. C. Marrack (half-backs); W. F. Bennett, C. H. D. Robbs, W. M. James, J. K. S. Fleming, F. J. Wood, H. C. Adams, F. G. Richards, H. Weekes (forwards).

ASSOCIATION FOOTBALL CLUB.

THIS month we have to record, out of five matches played, three wins, one defeat, and one draw. The goals scored were nineteen goals for and five against.

Unfortunately we have had several of our matches scratched, and though others have been arranged, these have fallen through, so we have only been able to play five matches.

The team has been getting together very well, and some of the matches gave evidence of some very promising combination, notably that of Robinson and Talbot on the right wing. The shooting has certainly been better of late, but it still seems to lack the force and precision which is necessary to score goals against a good goal-keeper. The halves are playing very well, Bostock especially having improved, and though perhaps Joy might play with a little more vigour, he is very hard to get past. Pickering is quite up to his usual form, and of the backs Brown has been playing very well indeed. Fox in goal is playing better than ever. Altogether the team looks as if it should have a very good chance of the Cup at the end of the year. We have had great hard luck, notably in the Casuals match, though we perpetually besieged the goal, our shooting was just not good enough, as the excellence of the goal-keeper was beyond dispute.

The second team have not done quite so well, having out of six matches lost three and won three, the number of goals for being fourteen, and the number against nineteen.

Saturday, Nov. 2nd.—ST. BARTHOLOMEW'S HOSPITAL v. OLD BRIGHTONIANS.

This match was played at Winchmore Hill, and although not fully represented Bart. scored a very creditable win by seven goals to two.

Three goals were scored for Bart.'s during the first ten minutes from shots by Prance (2) and Robinson. This seemed to give Bart.'s great confidence, as not until the end of the first half did the O.B.'s become dangerous, when Moorhouse scored for them from a rush in front of goal.

After half-time Bart.'s still continued the attack, and goals were secured by Talbot and Hay, the forming running down the whole length of the ground and putting in a grand shot which beat the O.B. custodian. Another goal for Bart.'s was scored by Prance from a centre by Robinson, and just before time Moorhouse scored again for the Old Brightonians by a weak shot.

Prance and Talbot played very well for Bart.'s.

Team.—E. H. B. Fox, goal; R. P. Brown and L. E. Whitaker, backs; T. D. Dawson, W. H. Joy, and H. J. Pickering, half-backs; T. H. Talbot, C. A. Robinson, C. H. G. Prance, H. Marrett, and A. Hay, forwards.

Wednesday, Nov. 6th.—ST. BARTHOLOMEW'S HOSPITAL v. CASUALS.

Played at Leyton before a good number of spectators. The result was a defeat for the Hospital by three goals to one. Rhodes kicked off for the Casuals, and the ball was taken down to Bart.'s end with no result. The Hospital took the lead then, and kept their opponents well in their own half till Drake getting the ball centred well, and Bryant, aided by a strong wind, put the ball into the net from a long shot. The same player added another within a few minutes from a centre by the outside left. After this Bart.'s were constantly pressing their opponents, but no points were scored. Just before half-time, from a good run Rhodes scored again for the Casuals, half-time score being 3-0. On restarting, Bart.'s, with the wind, took the ball into their opponents' end, and were only prevented from scoring by the excellence of the Casuals' goal-keeper. After several unsuccessful attempts, Joy from a good shot put the ball into the net. This was the only point scored by Bart.'s, though it is not too much to say that the Casuals did not get over the half-way line more than three or four times during the second half. Bart.'s sadly missed Willett and Robinson among the forwards, as the shooting was deplorable and in front of goal the play very poor indeed.

Woodbridge was the best of the forwards and Pickering of the backs.

Team.—E. H. B. Fox, goal; R. P. Brown and L. E. Whitaker, backs; A. H. Bostock, W. H. Joy, and H. J. Pickering, half-backs; T. H. Talbot, R. Waterhouse, C. H. G. Prance, E. W. Woodbridge, and A. Hay, forwards.

Saturday, Nov. 9th.—ST. BARTHOLOMEW'S HOSPITAL v. REIGATE.

Played at Reigate before a large number of spectators. The play was of an exceedingly even character, and time was called without any point being scored. Bart.'s kicked off down hill, and for a long time Reigate did not get away at all. Several shots were put in, but Ibbes, the Reigate goal-keeper, was quite equal to stopping them. Without his assistance Reigate would certainly have succumbed, as shot after shot was sent in to no effect. Meanwhile Fox was very busy, and though he had only one difficult shot to stop there were several occasions which a less experienced keeper might have been unequal to.

Pickering was the best of the backs and Robinson and Talbot on the right wing did some very useful work. The Reigate backs were a very good pair.

Team.—E. H. B. Fox, goal; R. P. Brown and L. E. Whitaker, backs; A. H. Bostock, W. H. Joy, and H. J. Pickering, half-backs; T. H. Talbot, C. A. Robinson, E. W. Woodbridge, M. D. Wood, and A. Hay, forwards.

Saturday, Nov. 16th.—ST. BARTHOLOMEW'S v. BECKENHAM.

This match was played at Winchmore Hill, and resulted in a very easy win for the Hospital by ten goals to nothing. The wind, which was blowing very hard straight down the ground, spoilt much of the play. Five goals were scored in each half—by Robinson (1), Talbot (1), Hay (1), Willett (4), Woodbridge (3). The forwards were very well together.

Team.—E. H. B. Fox, goal; L. E. Whitaker and R. P. Brown, backs; A. H. Bostock, W. H. Joy, and H. J. Pickering, half-backs; T. H. Talbot, C. A. Robinson, J. A. Willett, E. W. Woodbridge, and A. Hay, forwards.

Wednesday, Nov. 20th.—ST. BARTHOLOMEW'S HOSPITAL v. HASTINGS.

Played at Hastings before a large number of spectators, resulting in a win for the Hospital by one to nothing. Bart.'s lost the toss and played against the wind, Willett kicking off. The ball was immediately taken down to the Hastings end, and shots were sent in by Pickering and Deck, which however went wide of the post. Hastings then took possession, and taking the ball down to Bart.'s end things looked dangerous, but the pressure was relieved by a good volley by Brown; Talbot getting the ball and running down sent a shot in with great force, it however just skimming the cross-bar and going over. At half-time no points had been scored, but on re-starting, Bart.'s, keeping their opponents well in hand, besieged the goal time after time until Willett from a centre by Woodbridge put the ball into the net. The point, however, was disallowed owing to an energetic appeal for offside by Hastings. Shortly after Hay from a good run sent in a shot which went into the net. No more goals were scored for either side, though on several occasions it seemed as if Bart.'s must score, but the efforts of the back division of Hastings were sufficient to cope with them.

Time was called with the score at one to none in Bart.'s favour after a very enjoyable and good game.

The Bart.'s team played very well together and not individually as is sometimes the case. Deck, who took Joy's place, played very well at centre half.

Team.—E. H. B. Fox, goal; R. P. Brown and L. E. Whitaker, backs; A. H. Bostock, E. J. Deck, and H. J. Pickering, half-backs; T. H. Talbot, C. A. Robinson, J. A. Willett, E. W. Woodbridge, and A. Hay, forwards.

After the match an excellent tea and concert was provided for our benefit by several old Bart.'s men resident in Hastings, namely, Messrs. Christopherson, Coventon, Gabb, Jowers, Trollope, Wadd, and Wilson.

Mr. Christopherson, in the chair, rose to propose success to St. Bartholomew's Hospital, and Mr. Brown, the captain of the Bart.'s team, replied in a few well-chosen words, thanking our hosts, in the name of the team, "for the very kind way in which the Bart.'s men of that town had now for three consecutive years given the representatives of their Hospital a welcome which made the fixture with Hastings Athletic the event of the year among the Hospital fixtures." Between the speeches and after the concert went merrily on, the quartette of Messrs. Holyoake, Wait, Hessey, and Redmayne being especially admired. Towards the end of the concert Dr. Gabb was called upon very vigorously for a speech, and after futile protests, finding the opposition too strong, he rose to his feet and in a very humorous speech described his pleasure in forming one of the seven giving the tea and concert to the Bart.'s representatives. Of one thing he may be sure, that we shall not easily forget the cordiality of our reception nor the excellence of the entertainment.

As soon as the concert was finished we had to hasten away with great reluctance to catch the last train back to town.

THE RUGBY CUP TIES have been drawn as follows:—*First Round*.—(A) Charing Cross v. St. Bartholomew's, January 27th; (B) Guy's v. Middlesex, January 28th; (C) St. Thomas's v. London, January 30th. Byes—University, St. George's, St. Mary's, King's, and Westminster. *Second Round*.—(D) Winner of A. v. winner of B., February 10th; (E) Winner of C. v. University, February 11th; (F) St. George's v. St. Mary's, February 13th; (G) Westminster v. King's, February 14th. *Semi-Finals*.—(H) Winner of D. v. winner of E., February 25th; (I) Winner of F. v. winner of G., February 27th. *Final*.—Winner of H. v. winner of I., March 5th.

Smoking Concert Club.

SATURDAY, November 30th, was a red-letter day in the annals of the Club, as it was marked by a concert which fairly eclipsed any previous effort of the executive; in fact we shall never see another like it, because Gale has made his last appearance at a Bart's smoker. This concert, accorded as a farewell to the founder of the Club, and one whose "turn" has been the chief attraction at the smokers since they were started, was given at the Frascati Restaurant before a "bumper" house of Bart's men, from the Staff down to the Freshers. Gale, the hero of the evening, received a memento from his old friends in the shape of a case of pipes and a portrait of Rahere. The Chairman, in making the presentation, said the pipes would serve to keep the memory of the Smoking Concert Club and its doings green in the mind of the owner, and hoped they would solace him in times of perplexity. In returning thanks in a quaint and telling speech Gale wished the Club prosperity, and concluded by proposing the health of the Smoking Concert Club, coupled with the name of Mr. Marsh, the President. The toast was received with acclamation and a roar of approval. The success of Gale's songs was immediate and immense; it is difficult to say which is his *chef d'œuvre*, but the song describing the adventures of Dring and Bolton under the auspices of a brass plate is too funny for words, and convulsed his hearers. "The Birdseye Pill," another of Gale's latest compositions, sung with comic vigour and excellent effect by Mr. J. K. Birdseye, brought the house down once again, and when Messrs. Gale and Birdseye responded to the encore and sang the famous duet, "The Missing Word," the house was on the verge of syncope. The audience shouted for more, and in the course of the programme Gale appeared again, and sang "The Doctor," "The Bartholomew's Ball," and "The Lost Chord" (his own version). The other items in the programme were distinctly good. Mr. J. Edgar officiated at the piano most satisfactorily. Dr. Haydon, whose technique shows consistent improvement, played a violin solo, a "Romance" by Svendsen, which was favourably received. Mr. C. G. Meade gave the audience an opportunity for a chorus by singing "Flat-footed Jane" in his well-known style, the last verse ushering in Mr. Marsh and his guests, who received a hearty welcome. Mr. John Macauley, whose fine voice was heard to great advantage in "Take a pair of sparkling eyes," sang splendidly, and was vociferously encored. Mr. F. E. Meade made his *début* before a Bart's audience, and delighted everybody with his singing of "Thy Sentinel am I." In response to an encore and loud requests he sang "Drinking, Drinking, Drinking!" The next turn was an agreeable surprise to everybody, Mr. George Robey skipped on to the stage and sang "Dear Kind Doctor," the Club is much indebted to him for his kindness in coming, though at great personal inconvenience. The same remark applies to Mr. George Beauchamp, whose song, "One of the early birds," was applauded to the echo. The second part opened with a pianoforte selection by Mr. J. Edgar. Mr. Macauley scored another success by singing "Say Au Revoir." The last item on the programme was "Ventriloquism-up-to-date," by Mr. Frederick Russell; he gave a very clever exhibition of his art, and put his "Coster" through manœuvres funny enough to make a sphinx chuckle. The Concert concluded with an enthusiastic roar, which might have been diagnosed at times to be "Auld Lang Syne." Amongst those present were Mr. Marsh, Mr. Bowlby, Mr. Jessop, Mr. Waring, Mr. Wallis, Mr. Sloane, Dr. Hayward, Mr. Weir, and Mr. Gill. The Junior Staff were strongly represented. Three hundred is approximately the number of those present. The appearance of the room was immensely improved by ferns and flowers, very kindly provided for the occasion by Mr. Marsh. We cannot conclude without wishing Gale many turns of good fortune and a very successful practice in the Antipodes. He leaves for New Zealand early this month.

Golf Match.

GUY'S HOSPITAL v. ST. BARTHOLOMEW'S HOSPITAL.

GUY'S.		ST. BART'S.	
C. Coventry	0	F. W. Robertson	3
W. G. Mitchell	0	P. Furnivall	1
C. Trouncer	0	L. Evans	3
J. Bevis	7	R. C. Bailey	0
E. N. Scott	4	A. N. Weir	0
F. G. Thomas	0	G. W. Ellacombe	3
P. R. Lowe	5	H. Lance	0
C. Shepherd	1	J. Blagden	0
G. Duncan	7	Dr. Bowman	0
	24		10

The above match took place on Friday, October 25th last, over the Bickley Golf Club Ground, when Guy's won by a majority of 14 holes. Several of our men were without caddies—a circumstance which always has a deleterious effect in such a match.

C. Coventry and F. W. Robertson. This match at the start appeared to be a runaway thing for Robertson, who was 6 up in the first seven holes, also 6 up at the turn. Then Coventry, who besides having bad luck was playing much below his form, woke up, and coming in with a good score of 38 for the last nine holes reduced the lead to three holes.

W. G. Mitchell and P. Furnivall. This was a close match. It was of ding-dong character all through; Furnivall was 3 up and 2 to play, but lost the last two holes.

C. Trouncer and L. Evans. Evans played a strong game all through, and was never down, winning at the last by 3 up.

J. Bevis and R. C. Bailey. Bailey had the misfortune to be drawn against a player much his superior, and one who has had the advantage of a longer training in the game. Bailey, though obviously overmatched, played pluckily, and was beaten but not disgraced. Bevis was thought to be one of the strongest players on the field.

E. N. Scott and A. N. Weir. Weir was not in his best form; he was 3 up in the first four holes, square at the turn. Then Scott playing a strong game stood 4 up at the finish.

F. G. Thomas and G. W. Ellacombe. These two played in the first of our matches, when Ellacombe was successful; this success he was able to repeat after a well-contested game.

P. R. Lowe and H. Lance. This was a well-contested and even match up till the turn, and then Lowe came away with a strong game doing the last nine holes in 38, and won as above.

C. Shepherd and J. Blagden. This was a good match. No doubt Blagden will give a good account of himself if this couple meet again in our future matches.

G. Duncan and Dr. Bowman. This, as in the case of Bailey, was a match of a player of about 10 handicap allowance against one of 20. There is, therefore, no cause for surprise that Dr. Bowman was defeated, and, indeed, he did well not to be more severely beaten.

Looking at the match as a whole the better side won. The team sent out by Guy's Hospital was one of very even calibre; their average handicap allowance would not exceed 7. Our average handicap lay at about 12.

We hope many future matches will be played, and that this match first started by Guy's will extend to other hospitals, and be the means of good fellowship among golfers at all the hospitals.

Reminiscences.



THE two following cases sent to us by Dr. Lloyd Williams, of Corwen, North Wales, a late Bart's house surgeon, show that house surgeons of the present time meet with much the same style of thing as their predecessors did thirty years ago.

CASE 1.—A man, accompanied by a friend, walked to the surgery with a history that he had, whilst crossing Ludgate Hill, been struck by the pole of an omnibus on the bridge of his nose. When seen he appeared muddled, although he gave his name and a hazy account of what had happened. He did not smell of liquor, his friend stating from his own knowledge that the patient was, and had been for years, a total abstainer. For safety's sake I suggested he should stay at the

hospital, and walked with him across the square to Rahere, the late Mr. Coote's Accident Ward, Sister being told I wished the man to get into bed, which he did. He was seen in an hour's time, and seemed in sound natural sleep. At intervals he was visited, when the breathing was each time found to be more stertorous. Finally, about five hours after admission he died.

Post-mortem, which, by the way house surgeons then did (surgical registrars not then having been invented), it was found that both nasal bones were fractured, and that a fracture ran along the cribriform plate of ethmoid, and on to the lesser wing of the sphenoid on the right side. Over the fracture a clot of blood about the size of an egg was found.

This case exemplifies the wisdom of the golden rule paraphrased by the late Sir W. (then Mr.) Lawrence in his clinical lectures. In if doubt, "ward"—many a scandal and sensational newspaper paragraph being thus avoided, and Alma Mater honour passed on untarnished.

CASE 2.—Drunk or dying?

Called to surgery one night to a "police case," found woman on stretcher, four policemen and a sergeant; she having been carried all the way from the neighbourhood of the "Angel" at Islington.

History.—Said to have fallen backwards getting out of an omnibus. Having examined her carefully, finding no surgical injury, and observing pupils sensitive to light, I said to the "box-carrier," "Clerk, fetch Mr. Wood." With that the *quasi*-moribund jumped up, and said, "No, I am d— if you do." Anyhow, Mr. Wood was sent for, and came, the patient having meanwhile been placed in the old arm-chair, bracelets and garters being adjusted.

Enter Mr. Wood. "Hullo! here again, Clark? Pint of half-and-half, bucket, battery (half-and-half being Lotio Zinci Oss. and that wonderful cure-all H.M.S. & M.S. Oss). The result speedily followed, and in a short time a procession out of the surgery of an empty stretcher carried by the aforesaid P.C.'s, officered by the sergeant, and bringing up the rear the restored one, vowing eternal vengeance on the honoured head of Mr. Wood, the apothecary. The necessity for house physicians had not then dawned on the Hospital authorities. Thus the case was one of neither dead nor drunk, but malingering.

Appointments.

ABRAHAM, P. S., M.A., M.D., &c., to be Assistant Surgeon to the Hospital for Diseases of the Skin, Blackfriars.

TINDALL, ALEX. MCL., M.R.C.S., L.S.A., to be Medical Officer to No. 2 District of the Market Harbourough Union.

BAGNALL, OAKELEY, J. L., M.R.C.S., Staff-Surgeon to H.M.S. "Sappho."

SURGEON-CAPTAIN F. E. SWINTON is appointed Personal Assistant to the Principal Medical Officer Bombay Command.

Examinations.

M.B.LONDON.—The following have passed the M.B. final held last month.—*1st Division*, A. R. Cook, B.Sc., S. Gillies, G. H. Sowry, H. J. Walton. *2nd Division*, J. H. Bodman, G. A. Grace-Calvert, C. S. de Segundo, P. W. Dove, A. C. Gurney, J. P. O'Hea, M. G. Pearson, B.Sc., F. A. Smith.

FINAL F.R.C.S.—The following have passed the final F.R.C.S. recently held.—F. Fraser, Christopher Addison, T. R. Smith, F. E. A. Colby, T. Haig Brodie, H. S. Elworthy, J. W. Haines, Foulerton, and J. L. Dick.

FIRST F.R.C.S.—The following have been successful:—R. E. Newton, M.B., B.S.(Glas.), H. H. T. Dent, T. C. Littler-Jones, W. J. Harding, E. C. Morland, A. W. Dickson, and S. H. Berry.

FINAL M.B.LONDON (HONOURS).—*Medicine*:—*1st Class*, S. Gillies (bracketed third). *2nd Class*, A. R. Cook (second), G. H. Sowry (sixth), H. J. Walton (eighth). *3rd Class*, J. H. Bodman.

FINAL M.B. LONDON (HONOURS).—*Forensic Medicine*. *1st Class* S. Gillies (*second*) Gold Medal). *2nd Class*, M. G. Pearson (*fifth* place). *3rd Class*, A. R. Cook (*third* place).

OBSTETRIC MEDICINE LONDON (HONOURS).—*1st Class*, S. Gillies (*Scholarship and Gold Medal*), A. R. Cook (*fourth*). *2nd Class*, J. H. Bodman (*fourth*), G. H. Sowry (*sixth*).

Dr. F. W. ANDREWES has just taken the degree of M.D. in the University of Oxford.

Mr. G. V. WORTHINGTON has taken the degrees of M.B. and B.C. in the University of Cambridge.

OXFORD D.P.H.—F. J. Sadler, M.B.(Oxon.) and W. H. Symons, M.D.(Brux.), F.I.C., have just passed the above.

Correspondence.

To the Editor of St Bartholomew's Hospital Journal.

SIR,—Mr. Steedman's suggestion is a very happy one. Few men who have held appointments at Bart.'s but would be glad to have some memento of dear old Mark Morris. Words fail to describe the ready and valuable help he was always willing to give us. His bright cheery manner helped us in many a difficulty.

I would willingly subscribe towards an engraving of his portrait.—I am, faithfully yours, F. W. STRUGNELL.

[If those gentlemen who wish for a copy of the portrait of Mr. Mark Morris, which hangs in the Steward's Office, will send in their names to Mr. W. E. Sargent (Business Manager of the JOURNAL), the JOURNAL will take the necessary steps to secure its reproduction either as an engraving, or as an "autotype." The cost, provided the sufficient number of names is sent in, will not be more than 10s. 6d.—possibly less.—Ed.]

Review.

SCANDINAVIAN AND RUSS, or BY WAY OF THE BALTIC, by J. A. Manton, M.R.C.S., L.R.C.P.—This little book, which is profusely illustrated by reproductions from his own photographs, gives an account of Mr. Manton's holiday trip in Scandinavia and Russia. It is written in a clear, chatty way, and at the same time contains much useful information and many hints derived from actual experience, which cannot fail to be very serviceable to anyone contemplating a holiday on the Baltic. In the appendix we find a fund of particulars of where to go and what to see in Christiania, Copenhagen, Stockholm, St. Petersburg, and Moscow, and their neighbourhoods. We commend the book to all who contemplate a holiday in those parts.

Births.

COOK.—On November 15th, at 22, Newport Road, Cardiff, the wife of Herbert G. Cook, M.D., F.R.C.S., of a son.

RENDLE.—On December 4th, at 7, Buckland Terrace, Plymouth, the wife of C. E. Russel Rendle, Surgeon (son of E. M. Russel Rendle, of 11, Athenæum Terrace, Plymouth), of a son.

WARDE.—On November 9th, at Knowsley, Prescott, the wife of Wilfrid Brougham Warde, M.R.C.S., L.R.C.P., of a son.

Marriage.

NEWINGTON—SOUNDY.—On the 4th December, at St. Nicholas Church, Sutton, by the Rev. W. H. Turner, M.A., Charles W. H. Newington, M.R.C.S., L.R.C.P., son of the late S. W. Newington, Surgeon, of Goudhust, Kent, to Maud, daughter of the late W. B. Soundy, formerly of Redhill, and of Mrs. Soundy, Stanley House, Sutton, Surrey.

ACKNOWLEDGMENTS.—*Guy's Hospital Gazette*, *St. George's Hospital Gazette*, *The Student (Edinburgh)*, *On the Localisation of the Foramina at the Base of the Skull*, by EDWARD FAWCETT, M.B., C.M.Edin.